this is able (from p. 24) to amount up to 0*04 cubic metre steam per cubic metre air, taken at 0Q and 760 millimetres. Then the air requirement for 1 cubic metre gas would be 1-89+1-89 X 0*04=1*96 cubic metre air.

AIR EEQUIREMENT FOK BAD GAS.

In the installation of furnaces, it must be taken into consideration that the working of producers is able to be faulty at times, and that the furnace should also in these cases fulfil its function of giving up great amounts of heat at high temperature. In this connection it is requisite also to know the quantity of air which must be introduced into the furnace with bad quality gas. Only in order first of all to fix the lowest limit value for the worst gas, let the exaggerated assumption be made that 50 per cent, more air has entered the producer than is necessary for gasification, whereby this excess of air has partially burnt the gases formed. Further, let it be assumed that also an excess of steam has been present, so that, as indeed has often been practically observed, 50 per cent, of the steam employed has gone over into the gas undecomposed—that is to say, 0*21 cubic metre (as in steam-air gas from 0*88 kilogramme C, vide p. 78, 0*21 cubic metre H is present, which results from 0*21 cubic metre steam).

From the resolution into its elements of the best producer gas considered in the previous example, the 0 excess taken at 50 per cent, calculates out at 0*43 cubic metre, which has burnt the entire methane and 0*18 cubic metre CO, whereby from the methane a further 0*32 cubic metre water-vapour has originated. On this estimate the composition of the gas from 1 kilogramme C calculates out at

C02 0-41 cubic metre+CO 1*45 cubic metre+H 0*41 cubic metr6+N 4*38 cubic metres=6*55 cubic metres of dry gas+ 0'53 cubic metre steam, or a grand total of 7*18 cubic metres with consequently resulting analysis.

C02 51 per cent.+CO 21*8 per cent.+H 6*1 per cent.+ N 66*2 per cent.

and a combustible value of 827 calories per cubic metre or 5,515 calories per kilogramme C,